National Action Plan to Prevent Healthcare-Associated Infections: Roadmap to Elimination
EXECUTIVE SUMMARY

I. Background

A. Introduction

Healthcare-associated infections (HAIs) are infections that people acquire while they are receiving treatment for medical or surgical conditions in a healthcare setting. HAIs can be acquired anywhere healthcare is delivered. Hospital-acquired HAIs are among the leading causes of death in the United States. At any given time, about one in every 20 inpatients has an infection related to their hospital care. Hospital-acquired HAIs alone are responsible for $28 to $33 billion dollars in preventable healthcare expenditures annually. HAIs are largely preventable and can be drastically reduced to save lives and avoid excess costs.

To coordinate prevention efforts across the U.S. federal government, a senior-level Steering Committee for the Prevention of Healthcare-Associated Infections was established in 2008. Members of the Steering Committee include clinicians, scientists, and public health leaders from the:

- U.S. Department of Health & Human Services (HHS):
    - Agency for Healthcare Research and Quality (AHRQ)
    - Administration on Aging (AoA)
    - Centers for Disease Control and Prevention (CDC)
    - Centers for Medicare & Medicaid Services (CMS)
    - Food and Drug Administration (FDA)
    - Health Resources and Services Administration (HRSA)
    - Indian Health Service (IHS)
    - National Institutes of Health (NIH)
    - HHS Office of the Secretary (OS)
        - Office of the Assistant Secretary for Health (OASH)
            - National Vaccine Program Office (NVPO)
            - Office of Healthcare Quality (OHQ)
        - Office of the Assistant Secretary for Planning and Evaluation (ASPE)
        - Office of the National Coordinator for Health Information Technology (ONC)
- U.S. Department of Defense (DoD)
- U.S. Department of Veterans Affairs (VA)

The Steering Committee, utilizing its domain-specific working group structure, developed the *HHS Action Plan to Prevent Healthcare-Associated Infections*. The initial

Action Plan was released in 2009 with a focus on HAI prevention in acute care hospitals, called Phase I. Phase I addresses the most common infections in acute care inpatient settings and outlines specific recommended clinical practices, a prioritized research agenda, an integrated information systems strategy, policy options for linking payment incentives or disincentives to quality of care and enhancing regulatory oversight of healthcare facilities, and a national messaging and communications plan to raise awareness of HAIs among the general public and prevention strategies among healthcare workers. Experts and other stakeholders set nine five-year (by the end of 2013) HAI reduction goals or targets in the Action Plan and identified metrics and accompanying measurement systems to assess progress towards the reduction of specific HAIs and adherence to recommended prevention practices (see section IV below).

Following the release of the 2009 Action Plan, the Steering Committee expanded its scope to include both the outpatient environment and role of healthcare personnel in ensuring optimal patient outcomes called Phase II. Three additional Action Plan sections were drafted and include:

(1) Prevention of HAIs in Ambulatory Surgical Centers (ASCs);
(2) Prevention of HAIs in End-Stage Renal Disease (ESRD) Facilities; and
(3) Increasing Influenza Vaccination Coverage of Healthcare Personnel.

In April 2011, HHS launched the Partnership for Patients: Better Care, Lower Costs**,** a public-private initiative designed to improve the quality, safety, and affordability of healthcare for Americans. The first major goal of the Partnership for Patients is to keep patients from getting injured or sicker during the course of their care. Specifically, the initiative aims to decrease preventable hospital-acquired conditions by 40% compared with the 2010 rate. Achieving this goal would result in 1.8 million fewer injuries to patients and more than 60,000 lives saved over three years.

The Partnership for Patients is committed to addressing all forms of harm that can affect patients in hospitals. As a starting point, the Partnership for Patients has identified nine areas of focus, including four HAIs: catheter-associated urinary tract infections (CAUTI), central line-associated bloodstream infections (CLABSI), surgical site infections (SSI), and ventilator-associated pneumonia (VAP). The reduction goals and timeline of the Action Plan align with those of the Partnership for Patients. Whereas the Partnership for Patients focuses on acute care hospital settings, the Action Plan extends its prevention efforts to other healthcare settings. Under the Partnership for Patients umbrella, the Action Plan is anticipated to contribute to substantial increases in patient safety and healthcare quality according to an escalated timetable, thereby achieving both human and economic cost savings.

As demonstrated by the Partnership for Patients, HHS increasingly looks to its multidisciplinary and multi-sector partners to co-develop and amplify key messages, increase the adoption of recommended practices, and serve as local, state, regional, and national leaders in a coordinated effort to eliminate HAIs. Achievement of the goal of

eliminating preventable infections will provide significant advancement for the Partnership for Patients.

B. Changing Landscape of HAI Prevention

This section highlights some of the accomplishments and successes in the field of HAI prevention seen over the last few years. Particularly notable items:

- Decreases in the national incidence rates of some HAIs:
    - 33% decrease in CLABSI from the 2006-2008 baseline;
    - 18% decrease in invasive methicillin-resistant *Staphylococcus aureus* (MRSA) infections from the 2007-2008 baseline;
    - 10% decrease in SSIs from the 2006-2008 baseline and,
    - 7% decrease in CAUTI from the 2009 baseline.

- Investment in HAI research has increased, including in the field of implementation science. In addition, the Steering Committee's Research Working Group, chaired by AHRQ, and CDC's Prevention Epicenter research network have addressed priority gaps in prevention knowledge.

- Over 5000 healthcare facilities have enrolled in the CDC's National Healthcare Safety Network (NHSN) as of December 2011. CMS has begun requiring acute care hospitals that participate in the Hospital Inpatient Quality Reporting Program to report CLABSI data to NHSN.

- The Comprehensive Unit-based Safety Program (CUSP) demonstrates how a structured strategic framework for safety can result in dramatic improvements in patient care. The approach was designed to improve the culture of safety and help clinical teams learn from mistakes by integrating safety practices into the daily work of a unit or clinical area. Hospitals adopting this approach in their intensive care units (ICUs) have achieved significant reductions in CLABSI. AHRQ is currently expanding this effort to the prevention of other forms of HAIs, as well as to patient care areas of the hospital other than ICUs.
- To ensure that the Action Plan is truly representative of the needs of the many partners and participants in the national effort to prevent HAIs, each of HHS' component Operating and Staff Divisions along with OHQ sponsored and/or conducted numerous activities to ensure an on-going and vibrant dialogue with the many communities within public health and healthcare, as well as consumers.
- Funding made available by Congress through the American Recovery and Reinvestment Act of 2009 (ARRA) created opportunities for strengthening and building the state-level infrastructure for HAI prevention. The ARRA program was administered by CDC and CMS and enhanced state capacity to reduce and prevent HAIs, focusing on the Action Plan goals, as well as enhanced state health department capacity to inspect ambulatory surgical centers.

- A three-year independent evaluation of the HAI effort is underway regarding the impact of the Action Plan. The iterative, longitudinal, and comprehensive evaluation uses context, input, process, and product evaluations to measure the effectiveness of the initiative in reducing HAIs nationwide. A report summarizing initial recommendations is available: *Longitudinal Program Evaluation of the Healthcare-Associated Infections (HAI) HHS Action Plan Year 1 Report* (September 2010).

C. Ten Themes for Translating Strategy to Action

No one, simple formula will lead to the prevention and elimination of HAIs in every setting and every facility and for every patient. However, well-established strategies to prevent and eventually eliminate HAIs have been tested and proven. These strategies include actions taken during patient care in the clinic and at the bedside; actions taken by executives, managers, and administrators of facilities and health systems; and broad-based system changes that involve focused and concerted efforts by everyone. Ten key strategies for preventing HAIs are:

Frontline Clinicians

- Reducing Inappropriate/Unnecessary Device Use
- Improving Adherence to Hand Hygiene and Barrier Precautions
- Implementing and Improving Antimicrobial Stewardship

Clinical Leaders, Executives, and Administrators

- Demonstrating Leadership Support at the Highest Levels of the Facility
- Implementing a Culture of Safety

Government, Advocates, Clinical Leaders, and Administrators

- Enhancing Financial Incentives and Regulatory Oversight
- Implementing System-Based Approaches/Protocols/Checklists
- Achieving Better Use of Technology
- Improving Public Reporting of Credible Data
- Enhancing Traditional and Non-Traditional Partnerships

II. Phase I: Acute Care Hospitals

A. Research

In the two years since the first publication of the Action Plan, the Steering Committee's Research Working Group has brought about a more coordinated and aligned approach to HAI research across the HHS Operating and Staff Divisions including AHRQ, CDC,

CMS, and NIH. Through this ongoing collaboration, the group has discussed the most effective approaches to address identified gaps in the existing HAI knowledge base.

Significant investments in all four research areas – basic and/or laboratory science, epidemiology, infection control interventions, and implementation science – have been made by these agencies. Funding awards have been made for research to prevent HAIs, through investigator-initiated research and grants, as well as contracts for specific priority projects; these efforts are described in detail in the Research chapter of the Action Plan. The largest investment has been for research focusing on the reduction of MRSA-associated infection. Additionally, career development awards have been made to investigators to support their HAI-related efforts.

Continued research is needed to address remaining HAI research gaps across all four categories of scientific investigation in the priority areas of CAUTI, CLABSI, MRSA, SSI, VAP, and *Clostridium difficile* infections (CDI). For each of these focus areas, the chapter outlines the current state of research, as well as current gaps in knowledge and practices in each of the four research categories.

Moving forward, the Research Working Group will support efforts to address these identified gaps and current challenges and continue to coordinate research efforts across HHS and other areas of the federal government. Specifically, the group has three main objectives:

1. Coordinate and prioritize research efforts to reduce HAIs nationwide;
2. Design a plan and metrics for evaluating progress within the research domain to address HAIs; and,
3. Serve as a contact point to communicate to external stakeholders on this issue so that federal HAI research efforts are coordinated and linked to a broader national coalition.

Research has a key role in creating a "learning" healthcare system; through the efforts and activities described in detail in the Research chapter, the Research Working Group is a key component in supporting efforts to become a learning healthcare system.

B. Information Systems and Technology

Monitoring and measuring HAIs is a critical component of the overall strategy to prevent and reduce HAIs. Advances in information technology (IT), harmonization of disparate data standards, incentive programs designed to promote the meaningful use of electronic health records (EHRs), and capabilities to connect with and integrate multiple data types and sources all provide opportunities to enhance national capacity to monitor, measure, and prevent the occurrence of HAIs.

The following goals of the Steering Committee's IT Working Group seek to leverage IT advances and are shared by federal government, state agencies, healthcare providers and organizations, partner organizations, and the public:

- Take full advantage of healthcare data in electronic form;
- Build bridges between healthcare information systems used for infection control, quality improvement, and patient safety;
- Collaborate among and leverage resources and programs across federal agencies and other organizations at the local, state, and national levels;
- Use IT to link healthcare records and extend HAI reporting; and,
- Apply new tools for putting HAI prevention into practice, such as clinical decision support embedded in EHR systems.

Promoting the linking or sharing of HAI data across disparate systems in a more integrated fashion provides data for comprehensive analysis and to inform prevention strategies. Critical elements that support HAI data integration and interoperability across HHS and other systems are detailed in section II of the Action Plan*'s* IT chapter.

The IT working group supports a collaborative effort toward common goals, as outlined fully in its chapter. The Patient Safety Working Group (PSWG), coordinated by AHRQ, has played a significant role in identifying and initiating collaborations aimed at integrating HAI monitoring and measurement systems. The PSWG and IT working group share the following goals. Tasks for each of these goals are outlined in section IV.

- *Goal A:* Establish and maintain definitional alignment and identify standardized data elements that are needed to measure HAIs across HHS agencies and encourage existing federal participation with Standards Development Organizations and the Health IT Standards Committee to ensure that gaps in the available standards are addressed;
- *Goal B:* Provide guidance to enable integration of HAI data from multiple HHS databases for the purpose of benchmarking progress in reducing HAIs;
- *Goal C:* Mobilize health information systems to help reinforce appropriate patient safety recommended clinical practices; and,
- *Goal D:* Seek strategic opportunities to make varied HHS data systems interoperable to enhance understanding of HAIs.

A recently-completed federal HAI data system inventory has informed the group's efforts toward these goals. Findings from the inventory helped clarify the extent of definitional alignment and data element standardization among the inventoried systems and are outlined in Section V. The inventory was an important first step toward mobilizing health information systems in ways that address strategic gaps in HAI coverage at the local, state, and national levels.

The IT Working Group will continue to support a coordinated integration effort that engages federal agencies and public and private sector partners in the effort to integrate IT systems and leverage IT advances towards the elimination of HAIs.

C. Incentives and Oversight

The Incentives and Oversight chapter of the Action Plan discusses various ways in which tools and initiatives are used to support the nation's efforts to prevent and reduce HAIs.

Section II describes regulatory oversight activities, including Conditions of Participation (CoPs) and Conditions for Coverage (CfCs), accreditation, and survey and certification. The CoPs and CfCs are the federal health and safety requirements that hospitals and other providers must meet in order to participate in the Medicare and Medicaid programs and are intended to ensure that high quality care is provided to all patients.

The following recommendations would further strengthen the commitment to quality in HAI prevention:

- Require that a hospital ensure their infection control program follows currently recognized national standards of practice; and,
- Add a requirement specifically requiring that the infection control program be an integral part of the hospital's quality assessment and performance improvement program. While the current Infection Control CoP does require that the hospital-wide quality assurance and training programs address the problems identified by the infection control officer, this revision would specifically link the Infection Control CoP with the equally important Quality Assessment and Performance Improvement CoP, requiring hospitals to pursue a more proactive and innovative approach to infection control through their on-going program.

CMS, in coordination with experts across the country, have identified recommendations for regulatory oversight of hospitals, including:

- Increase hospital surveyor training on recent revisions of hospital interpretative guidelines to ensure that 100 percent of dedicated hospital surveyors have the opportunity to be trained on the revised guidelines;
- Incorporate enhancements, which arise from collaborative activities with CDC, into the surveyor training program as a means of providing surveyors with illustrative examples of best infection control practices in hospitals;
- Conduct a pilot study of a potential surveyor tool. CMS is currently piloting a surveyor tool to assess infection control in hospitals. This tool is based on a similar tool for ambulatory surgical centers, which was piloted in 2008 and adopted for use on October 1, 2009. After modification based on surveyor feedback, CMS expects to require the use of the tool during all hospital surveys of the infection control CoP, beginning in FY 2013;
- Require accreditation organizations to also make assessment of infection control a priority focus; and,

Section III discusses value-based purchasing programs and other financial incentives that encourage healthcare providers in various care delivery settings to report and reduce

HAIs. These tools include measurement and payment incentives to encourage beneficial interventions and outcomes to improve performance. Value-based purchasing, under the ACA, links payment to performance and is a key policy mechanism that CMS is proposing to transform Medicare from a passive payer to an active purchaser of high value services.

The Preventable Hospital-Acquired Conditions Provision, Present on Admission Indicator Reporting, and Hospital Pay-for-Reporting are three hospital-related initiatives that CMS is using to promote increased quality and efficiency of care. The Hospital-Acquired Conditions provision is a Medicare statute that requires CMS to select conditions that will no longer trigger higher payment when they are acquired during hospitalization. CMS selected conditions must be: (1) high cost, high volume, or both; (2) assigned to a higher paying Medicare-severity diagnosis-related group when present as a secondary diagnosis; and (3) known to be reasonably prevented through the application of evidence-based guidelines.

Under IPPS, hospitals are encouraged to treat patients efficiently because they receive the same diagnosis-related group payment for stays that vary in length and the services provided, which gives hospitals an incentive to avoid unnecessary costs in care delivery. In some cases, conditions acquired in the hospital, including infections, do not generate higher payments than the hospitals would otherwise receive for cases without these conditions. To this extent, IPPS encourages hospitals to avoid complications, including infections.

Beginning in FY 2015, under ACA, CMS will reduce payment for discharges with selected Hospital-Acquired Conditions by one percent for hospitals that have risk-adjusted Hospital-Acquired Conditions rates in the top quartile of applicable hospitals. In addition, ACA requires a Report to Congress on extending the Hospital-Acquired Conditions payment policy to other types of providers.

The section also describes hospital pay-for-reporting, CMS demonstration projects, Physician Feedback Program, quality reporting outside of acute care hospitals, accountable care organizations, and related topics.

Section IV focuses on public reporting or transparency and associated incentives, including Hospital Compare and Physician Compare. Each year, CMS will continue to add new measures to Hospital Compare including HAI measures starting with the public reporting of CLABSI in 2012. These enhancements are part of HHS' on-going commitment to increased transparency in healthcare.

Section V describes initiatives implemented by CDC, CMS, state health agencies, and private organizations to prevent and reduce HAIs, including Quality Improvement Organizations (QIOs) and Medicare Advantage Efforts and its requirement for quality care, among others.

HAI prevention QIO activities in the Patient Safety Theme will focus on reducing CAUTI, CDI, CLABSI, and SSI hospital facility-wide amongst other patient safety initiatives.

As part of the proposed Medicare Part C reporting requirements effective January 1, 2009, CMS has been collecting measures that involve hospital-acquired conditions. Some of these measures involve infections, including: VCAI; CAUTI; SSI, mediastinitis, after coronary artery bypass graft; SSI following certain orthopedic procedures; and SSI following bariatric surgery for obesity. These data will be used in developing and reporting performance metrics for Medicare Advantage organizations. These measures are now subject to a yearly data validation audit process.

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CMS and its partners have many initiatives and programs to regulate and track HAIs. Compliance with these regulations and promotion of the quality based improvement practices will improve the public's health. Increasingly, these efforts also include more direct sources of information for providers and patients, which should influence choices that help diminish and prevent HAIs.

D. Outreach and Messaging

The Steering Committee's Outreach and Messaging Working Group addresses strategies for communications with numerous audiences about multiple infections and the various, sometimes complex, prevention practices. The Outreach and Messaging chapter builds on the 2009 Action Plan by further developing the following goals:

- *Goal 1:* Promote and sustain heightened national attention about issues surrounding HAIs among various target audiences;
- *Goal 2:* Develop a dynamic, responsive, comprehensive, and strategic communication approaches for preventing various types of HAIs; and,
- *Goal 3:* Increase knowledge and practice of key prevention strategies for the various HAIs across and within specific healthcare settings.

The chapter outlines target audiences, key messages, tactics, and materials/products for HAI communication efforts. Some audiences are customary constituents of HHS communications, such as healthcare providers and health professional groups. Others, such as academic medical institutions, were selected specifically to accomplish the outreach goal of maximizing knowledge gains and sustaining gains over time.

The chapter also describes the planned national HAI consumer media campaign sponsored by OHQ and supported by the working group. The campaign will engage patients and family caregivers as partners in HAI prevention. Messages, based on target audience research, rely on themes of a partnership between patients, their families, and healthcare providers for the prevention of HAIs.

As HAI prevention and reduction is a shared responsibility, the working group prioritized partnership engagement and collaboration across sectors. These efforts are noted in Table 8: HAI Target Audiences and Key Messages, Tactics, and Materials/Products. Finally, the chapter lists process measures that will help to determine the reach of social and traditional media, public education, and awareness activities.

III. Phase II: Select Outpatient Settings and Influenza Vaccination of Healthcare Personnel

A. Ambulatory Surgical Centers

Ambulatory Surgical Centers (ASCs) are outpatient healthcare settings that have demonstrated tremendous growth not only in procedure volume but also in the complexity of the procedures performed on site. However, no reliable national estimates of the number of HAIs originating in ASCs currently exist and little is known about infection prevention and control practices in this setting.

The ASC chapter of the Action Plan summarizes HAI prevention issues and key actions needed to assure safe care in ASCs. Three unmet needs pertaining to HAI prevention in ASCs are broadly categorized in the chapter:

1. The need for proactive HAI prevention at the clinic level;
2. The need to sustain and expand improvements in oversight and monitoring; and,
3. The need to develop meaningful HAI surveillance and reporting procedures.

Key focus areas moving forward for HAI prevention in the ASC setting include:

- Engaging stakeholders to facilitate collaboration and promote a culture of safety, including
    - identifying additional strategies to involve consumers and others on an on-going basis;
    - discussions regarding how patients can be better educated and empowered about identification and reporting of adverse events resulting from outpatient procedures;
- Identifying needs and opportunities for HAI reduction through improvements in the process of care within ASCs;
- Disseminating evidence-based guidelines and training for infection control and prevention in ambulatory settings;
- Improving and expanding process measures while focusing on specific procedures for application across setting types;
- Expanding current knowledge of surveillance through research to include ASC-specific measures and associated strategies for outcome measurement;

- Expanding the utility of broad financial incentives to encourage the use of beneficial interventions including IPPS rules for reporting HAIs to CMS via NSHS for ASCs; and,
- Extending HAI prevention actions developed for ASCs to other outpatient surgery venues since ASCs represent only a subset of the ambulatory care facilities performing surgical procedures.

B. End-Stage Renal Disease Facilities

End-stage renal disease facilities provide hemodialysis treatment for ESRD patients on a regular basis. HAIs are a challenge in this outpatient setting – the process of hemodialysis treatment involves vascular access, or accessing blood vessels, to remove and return blood to the body. Patients can be at risk of contracting infections from other contaminated surfaces or equipment and from the hands of providers. Infection is the leading cause of morbidity and the second cause of death in patients with chronic kidney failure on hemodialysis.

The ESRD Facilities chapter of the Action Plan focuses on HAIs related to vascular access and HAIs associated with hepatitis B and hepatitis C because these HAIs have significant impact on dialysis patients and due to the availability of evidence-based processes to prevent these infections. Key recommendations to prevent HAIs in the ESRD facility are:

- *Prevention of Intravascular Infections*: Prevention of infections that can occur due to accessing veins, particularly bloodstream infections;
- *Prevention of Bloodborne Pathogen Transmission*: Prevention of diseases spread by the contamination of blood, including hepatitis B and hepatitis C;
- *Prevention of Influenza and Pneumococcal Disease*: Prevention of the flu and pneumonia among ESRD patients, as they have an increased risk of developing severe complications from these diseases;
- *Prevention Priority Implementation Bundles*: Infection prevention protocols grouped together including catheter maintenance, environmental cleaning, and methods for conducting HAI surveillance and reporting.
- *Education and Training*: Increased education and training in HAI prevention for providers, as well as patients and families.

Several challenges and opportunities to implementing and sustaining efforts aimed at reducing HAIs in ESRD facilities remain. Increased and sustained collaboration among federal, state, and local districts is needed to effectively coordinate regulatory oversight, infection reporting, and infection control recommendations. ESRD facilities often lack sufficient resources, such as a dedicated infection preventionist, educational resources, and infection prevention staff training. As many ESRD patients are frequently hospitalized, care provided in the hospital, free-standing ESRD facility, and home need increased coordination to ensure that the patient is receiving coordinated care and proven infection prevention practices are used in all settings. The ESRD patient and his or her family is a key element in infection prevention as well; educating and involving the

patient as a member of the healthcare team is key to preventing HAIs. Finally, the integration of data systems would provide benefits in monitoring HAI data and applying infection data to improve prevention practices. On-going research and initiatives are underway to address these opportunities and challenges to reducing HAIs in the ESRD setting.

C. Influenza Vaccination of Healthcare Personnel

Healthcare personnel (HCP) are a priority for influenza vaccination as they can acquire influenza from patients and can transmit influenza to other patients, who are more likely to be in a high-risk category, as well as other HCP. The term HCP refers to all paid and unpaid persons working in healthcare settings who have the potential for exposure to patients and/or to infectious materials such as body substances, including physicians, nurses, laboratory personnel, facility administrative staff, and volunteers.

Unlike many vaccines, the influenza vaccine needs to be developed annually. This requires a highly orchestrated, collaborative effort of the global health community. Each year there is a worldwide effort for influenza disease surveillance, development of recommendations for immunization, selection of virus strains, and the manufacture and distribution of new vaccine. The FDA regulates vaccines for use in the United States; the agency is responsible for evaluating vaccine safety and effectiveness and monitoring conformity with statutory and regulatory standards for licensure and use in the United States. Working to ensure an adequate, safe, and effective supply of influenza vaccine each year is one of FDA's highest priorities.

While vaccination is a key preventive measure against influenza, vaccination rates have historically been low. Healthy People 2020 supports a 90 percent vaccination rate goal for HCP. The Steering Committee's Working Group supports this target and also proposes an interim target of 70 percent vaccination coverage among HCP by 2015. To achieve these targets, comprehensive strategies are required, one component of which is vaccination. Employers of HCP should use evidence-based, multi-component intervention approaches to maximize vaccination rates. Some states have opted to pass legislation with vaccination requirements, such as requiring that an employer of HCP offer vaccination or requiring that employees be vaccinated. The chapter outlines various educational resources that can assist employers in developing an intervention that is appropriate for their context. While some have called for mandatory vaccination policies, others have argued that there is not enough data to support these policies and have cautioned that these policies can have a negative impact on the employer-employee relationship.

The working group aims to increase coordination across HHS Operating and Staff Divisions and other federal departments, increase awareness of the importance of influenza vaccination for HCP and patients, and make progress toward meeting national targets for influenza vaccination coverage of HCP. Specially, designated tasks are to:

- Develop, synthesize, and/or enhance evidence and tools for improving influenza vaccination of HCP;
- Enroll stakeholders in the initiative to improve influenza vaccination coverage among HCP; and,
- Enhance and/or develop quality standards for influenza vaccination of HCP.

The group has planned activities in support of these tasks, fully outlined in its Action Plan chapter.

IV. HAI Prevention Target Goals

Progress toward the goal of reducing and eliminating HAIs can only be gauged by quantifying their incidence. The 2009 Action Plan established nine five-year target goals and accompanying measurement systems to aid in monitoring progress toward reducing HAIs in acute care hospitals.

In addition to the original nine measures and target goals, the Action Plan adds goals in four areas: VAP in acute care hospitals, infections in ASCs, infections in ESRD facilities, and influenza vaccination coverage rates of HCP. The measures and corresponding goals are summarized below.

A. Current Metrics and Targets

The following metrics and five-year targets for reducing the incidence of infections in acute care hospitals were published in and established by the 2009 Action Plan. These are five-year targets to be met by December 31, 2013. A summary of current progress according to the Action Plan measures, as available, is also listed below. A complete summary of progress can be found on the OHQ website.[1]

[1] http://www.hhs.gov/ash/initiatives/hai/nationaltargets/index.html

Table 1. Current HAI Metrics and Targets – Five-Year Goals (2009-2013)

#	Metric Title	Comparison Metric	Measurement System	National Baseline	Baseline Information or Notes	National 2013 Target	Progress Information or Notes
1	Central Line-Associated Bloodstream Infections (CLABSI)	CLABSI Standardized Infection Ratio (SIR)	CDC National Healthcare Safety Network (NHSN)	2006-2008	Baseline: 1,385 facilities, 3,972 locations; 62% ICU • 7,434,389 central line-days reported • 48 states reporting 2009: 1,603 facilities; 4,872 locations; 62% ICU	50% reduction in CLABSI in ICU and ward-located patients or 0.50 SIR	2009: **SIR = 0.82** 2010: **SIR = 0.67** (9,716 observed ÷ 14,521 predicted CLABSIs) • ICU SIR = 0.65; non-ICU SIR = 0.74 • 33% fewer CLABSIs reported than predicted • 2,256 facilities reporting • 52% ICU
2	Central Line Insertion Practices (CLIP) Adherence	CLIP adherence percentage	CDC NHSN	2009	• 345 facilities, 743 locations reporting • 70% ICU • 16 states reporting • **92% CLIP adherence**	100% adherence with central line bundle	2010: **94.5% adherence** • 1,309 locations reporting • 55% ICU
3	*Clostridium difficile* Infections	Hospitalizations with *C. difficile* per 1,000 discharges	AHRQ Healthcare Cost and Utilization Project (HCUP)	2008	• **11.7 per 1,000 discharges** • ~35 million hospitalizations • ~4,300 hospitals • 42 states reporting	30% reduction in hospitalizations with *C. difficile* per 1,000 patient discharges	2009: • **11.3 per 1,000 discharges** 2010 (Projected): • **11.5 per 1,000 discharges** 2011 (Projected): • **11.9 per 1,000 discharges**
4	*Clostridium difficile* Infections	*C. difficile* SIR	CDC NHSN	2009-2010	2009: • 250 facilities, 417 locations reporting • 52% facility-wide inpatient; 15% ICU • 25 states reporting 2010 (through Aug): • 389 facilities, 643 locations reporting • 53% facility-wide inpatient; 14% ICU • 27 states reporting	30% reduction in facility-wide healthcare facility-onset *C. difficile* LabID event or 0.70 SIR	2010: • *Part of baseline period* • *Data not yet available*

#	Metric Title	Comparison Metric	Measurement System	National Baseline	Baseline Information or Notes	National 2013 Target	Progress Information or Notes
5	Catheter-Associated Urinary Tract Infections (CAUTI)	CAUTI SIR	CDC NHSN	2009	• 639 facilities, 2,642 locations reporting • 40% ICU • 3,881,311 catheter-days reported	25% reduction in CAUTI in ICU and ward-located patients or 0.75 SIR	2010: **SIR = 0.93** • SIR = 8,441 (observed) ÷ 9,061 (predicted) CAUTIs = 0.93 • 7% fewer CAUTIs reported than predicted • 1,005 facilities reporting from 3,662 locations; 40% ICU
6	MRSA Invasive Infections (population)	MRSA incidence rate (healthcare-associated) per 100,000 persons	CDC Emerging Infections Program (EIP) Active Bacterial Core Surveillance (ABCs)	2007-2008	• Active laboratory and population-based surveillance for invasive MRSA infections within 9 EIP ABCs catchment areas (~19 million) • **2007-2008 healthcare-associated rate: 26.24/100,000 persons** • Incidence estimation projected to nation, using U.S. Census data, adjusting for age and race	50% reduction in incidence of healthcare-associated invasive MRSA infections	2009: **23.14 per 100,000** • **11.8% reduction** 2010: **21.46 per 100,000** • **18.2% reduction** • Estimated 13,478 fewer cases than baseline
7	MRSA Bacteremia (hospital)	MRSA bacteremia SIR	CDC NHSN	2009-2010	2009: • 508 facilities, 888 locations reporting • 5% facility-wide inpatient; 56% ICU • 50 states reporting 2010 (through Aug): • 612 facilities, 971 locations reporting • 16% facility-wide inpatient; 48% ICU • 50 states reporting	25% reduction in facility-wide healthcare facility-onset MRSA bacteremia LabID event or 0.75 SIR	2010: • *Part of baseline period* • *Data not yet available*
8	Surgical Site Infections (SSI)	SSI SIR	CDC NHSN	2006-2008	• 801 facilities reporting • 613,263 SCIP procedures reported • 43 states reporting ** 2009 SIR estimate updated from previously reported 0.95 as 3 additional facilities reported since last year's report*	25% reduction in admission and readmission SSI or 0.75 SIR	2009: **SIR = 0.98** • 2% fewer SSIs than predicted • 949 facilities reporting* 2010: **SIR = 0.90** • 10% fewer SSIs than predicted • 1,386 facilities reporting

#	Metric Title	Comparison Metric	Measurement System	National Baseline	Baseline Information or Notes	National 2013 Target	Progress Information or Notes
9	Surgical Care Improvement Project (SCIP) Process Measures Adherence	SCIP adherence percentage (SCIP Inf 1, 2, 3, 4, 6)	CMS SCIP	2006-2008	• Based on 3,600-3,700 hospitals reporting per quarter since mid-2006 • Calendar quarter hospitals required to report each measure for Reporting Hospital Quality Data for Annual Payment Update (RHQDAPU): o SCIP Inf 1 – 3Q 2006 o *SCIP Inf 2 – 1Q 2007* o *SCIP Inf 3 – 3Q 2006* o *SCIP Inf 4 – 1Q 2008* o *SCIP Inf 6 – 1Q 2008*	95% adherence to process measures to prevent SSI	2009: • ***SCIP Inf 1 – 96%*** • ***SCIP Inf 2 – 98%*** • ***SCIP Inf 3 – 92%*** • ***SCIP Inf 4 – 92%*** • ***SCIP Inf 6 – 99%*** 2010: • *Data not yet available*

**SCIP Inf 1: Antibiotics within 1 hour before incision or within 2 hours if vancomycin or quinolone is used; SCIP Inf 2: Received prophylactic antibiotics consistent with recommendations; SCIP Inf 3: Prophylactic antibiotics discontinued within 24 hours of surgery end time or 48 hours for cardiac surgery; SCIP Inf 4: Controlled 6 am postoperative serum glucose for cardiac surgery patients; SCIP Inf 6: Appropriate hair removal for surgery patients; SCIP Inf 4 and Inf 6 were not required for reporting until 1Q 2008*

It is important to note that all the measures for which data is available are on target to meet their associated five-year goal by the end of 2013. The one exception is adult discharges with CDI sourced from AHRQ's Healthcare Cost and Utilization Project which shows a stabilization of rates over the assessment period. According to the reported data, the five-year Action Plan goal will not be met based on these early assessments. However, efforts are underway in both the public and private sectors to address the challenging problem of CDI. As an example, AHRQ has made investments in various research projects to better understand CDI transmission and prevention. CDC is working with various stakeholders on CDI prevention collaboratives. In addition, CDI is included in the "All Other" category in the list of priority conditions to be addressed by the Partnership for Patients.

It should also be noted that the Action Plan goals established in 2009 are aligned with the goals of the Partnership for Patients and have the same timeline ending in 2013. The Action Plan goals are also aligned with other federal initiatives (e.g., Healthy People 2020, HHS High Priority Performance Goals) to reduce confusion. While the definitions may differ slightly across HHS systems and the populations covered by the assessment systems differ, the reduction goals have been broadly aligned.

B. Proposed Metrics and Targets for Ventilator-Associated Pneumonia, Ambulatory Surgical Centers, End-Stage Renal Disease Facilities, and Influenza Vaccination of Healthcare Personnel

The following metrics and corresponding goals are proposed for inclusion in the second iteration of the Action Plan.

Acute Care Hospitals – Ventilator-Associated Pneumonia

By December 31, 2015, achieve the following:

Table 2. Proposed Ventilator-Associated Pneumonia (VAP) Measures and Goals

Measure/Metric	Five-Year (2015) Goal
Percentage of mechanically ventilated adult patients assessed daily for eligibility for sedation vacation*	100% compliance with daily assessment of patient eligibility for sedation vacation
Percentage of mechanically ventilated adult patients who are eligible for sedation vacation for whom lightening of sedation is performed daily*	100% compliance with performing daily lightening of sedation in those patients eligible for sedation vacation
Percentage of mechanically ventilated adult patients assessed daily for eligibility for spontaneous breathing trials*	100% compliance with daily assessment of patient eligibility for spontaneous breathing trials
Percentage of mechanically ventilated adult patients who are eligible for spontaneous breathing trials* for whom such trials are performed daily	100% compliance with performing daily spontaneous breathing trials in those patients eligible for such trials

*In accordance with established protocol

As these proposed measures represent practices considered to be the standard of care for adult ventilated patients, the compliance data might be uniformly high. Capturing accurate and reliable compliance data for the proposed metrics is potentially challenging, but the standard implementation and measurement of these metrics can be operationalized. At this time, there are insufficient data to support implementation of these process measures for prevention of VAP in children and infants. Thus, these process measures are proposed for use with adult populations only. Specific metrics assessing head-of-bed (HOB) elevation and the use of oral antiseptics, such as chlorhexidine, have not been identified because of several unresolved issues. A method for performing consistent measurement of adherence to HOB elevation across facilities has not been determined. Additionally, insufficient data exist for determining the adequate frequency of performing oral care and the concentration of oral chlorhexidine that would be effective in reducing VAP. Further discussion on these topics with input from the scientific and critical care communities is required.

One proposed data system for reporting adherence to established process measures for VAP prevention is NHSN, although capacity for such reporting does not currently exist and the use of other existing systems needs exploration. National level efforts include work on revising the surveillance definition for VAP..

Ambulatory Surgical Centers

CMS-certified ASCs are expected to demonstrate 100 percent adherence to all measures contained within the infection control survey tool used by surveyors during the inspection process. Facilities, including office-based practices and other settings not subject to routine inspections, are encouraged to conduct regular self-audits to assure ongoing compliance.

By December 31, 2012, HHS, with stakeholder input, will:

1. Identify existing quality measures (e.g., serious reportable events, CMS SCIP process measures) that have been endorsed and are applicable to ASCs;
2. Identify areas where additional quality measures are needed for ASCs; and
3. Establish a timeline and methods for adoption and implementation of select measures within ASCs.

To support a consistent approach to HAI surveillance in ASCs, by December 31, 2012:

1. Identify a set of ASC procedures for which SSI definitions and methods should be developed; and
2. Establish a multi-year plan and phased approach to support their routine surveillance.

End-Stage Renal Disease Facilities

By December 31, 2015, achieve the following:

Table 3. Proposed ESRD Facility HAI Reduction Measures and Goals

Measure/Metric	Definition	Five-Year (2015) Target	Data Source(s)
All bloodstream infections stratified by access type	# of incident positive blood cultures in CVC patients/100 CVC patient-months	**Pooled mean < or = to 5.0 OR RIR > or = 40%**	NHSN CrownWeb*
Access-related BSI stratified by access type	# of incident positive blood cultures with vascular access as suspected source or with unknown source in CVC patients/100 CVC patient-months	**RIR > or = 50%**	NHSN CrownWeb*
Seasonal influenza vaccination for ESRD patients	# of ESRD patients who received seasonal influenza vaccination /all ESRD patients x 100	**Greater or = to 90%**	Medicare Claims CrownWeb*
Facilities reporting to NHSN either manually or electronically or via data interoperability mechanism with CMS	# of ESRD facilities that report to NHSN/all ESRD facilities x 100	**Greater or equal to 90%**	NHSN
Any CVC use in patients on hemodialysis	# of hemodialysis patients with CVCs/# of hemodialysis patients x 100	**Absolute target: less or =to 20%; OR RIR greater than or = to 20%**	Fistula First NHSN CrownWeb*
Screening for Hepatitis C antibody	# of ESRD facilities that screen all susceptible hemodialysis patients biannually/# of all ESRD facilities x 100	**Greater than or = to 70%**	CrownWeb*
Hepatitis B vaccine coverage in hemodialysis patients	#of hemodialysis patients who have ever received > or = to 3 doses of hepatitis B vaccine/all hemodialysis patients x 100	**Greater or = to 90%**	Data from ESRD Networks CrownWeb* Medicare Claims

**As CrownWeb has not yet been launched for national rollout at the time this document is being written, it could not be confirmed definitively as a source of data for the above metrics.
Key: BSI = bloodstream infection, CMS = Centers for Medicare and Medicaid Services, NHSN = National Healthcare Safety Network, RIR = Relative Improvement Rate, OR = odds ratio, CVC = central venous catheter

Please see the ESRD Facilities chapter for additional comments and discussion of these proposed metrics.

Influenza Vaccination of Healthcare Personnel

By December 31, 2015, achieve 70% vaccination of healthcare personnel. The proposed measurement system for monitoring vaccination coverage rates is NHSN.

V. Conclusion: A National Commitment to Safe, Quality Healthcare

The HAI Steering Committee is pursuing the aspirational goal that HAIs, specifically certain types of HAIs, can and should be eliminated and recognizes the following:

- Under the Partnership for Patients, the national commitment and partnership between healthcare providers, consumers, government, and industry is expected to be strengthened and sustained over time; and,
- While some strategies are well-known and ready for universal adoption, others are not yet fully proven and some solutions will require innovation and technology not yet available.

The necessary commitment of resources for these efforts should be balanced against the considerable anticipated savings in lives and healthcare costs over time. Demonstrable human and economic savings will be central to strengthening and sustaining our efforts. The Action Plan has contributed to the significant progress in HAI prevention seen across the country and has brought about an enhanced level of federal collaboration that was called for in the 2008 report from the Government Accountability Office. The goal of the Action Plan in achieving action in preventing HAIs, a product of many years of work, will be continued through and contribute vitally to the Partnership for Patients.